

## **SPECIFICATION**

### **TITLE OF THE INVENTION**

CONTAINER FOR HOUSING FROZEN SUSHI, PACKED FROZEN SUSHI UNIT, AND DISTRIBUTION METHOD OF FROZEN SUSHI

### **BACKGROUND OF THE INVENTION**

#### **Field of the invention**

The present invention relates to a container for housing frozen sushi, a packed frozen sushi unit, and a distribution method of frozen sushi, specifically to a container with which, when thawing the frozen sushi housed therein in an electronic oven and so on, the sushi-rice (boiled rice with vinegar) portion can be unfrozen to body temperature, the sushi-neta (Sushi items) can be unfrozen in a cold state without thermal denaturation, and the unfrozen sushi can be served to be tasted as is retained on the bottom cover of the container; packed frozen sushi unit; and a method of distributing the frozen sushi as a packed unit.

#### **Description of the Related Art**

There are several kinds of sushi; nigiri-sushi (or edomae-sushi) is prepared by forming a mouthful-sized oval piece of sushi-rice (boiled rice with vinegar and seasoning mixed therewith to give flavor to and hereafter referred to as sushi-rice), putting a piece of fish, shellfish, shrimp, etc. thereon, and then adjusting the overall shape by lightly gripping them; oshi-sushi (or bo-sushi) is prepared by filling a rectangular wooden frame of about 20cm×10cm with sushi-rice, putting a piece or pieces of fish, shellfish, shrimp, etc.

on the rice, pressing the resultant food from above with a wooden lid for shape adjustment, and then cutting the food into mouthful-sized pieces; maki-sushi (rolled-sushi) called norimaki or futomaki is prepared by surrounding a piece or pieces of fish, baked egg, cucumber or like vegetables with sushi-rice of predetermined thickness with a dried laver sheet surrounding the outermost circumference to form a rolled sushi having a circular cross section, (The difference between norimaki and futomaki is that norimaki has a single kind of ingredient in the center compared with that futomaki has a plural ingredients in the center, and the former is about 3 cm in diameter, while the latter is about 5 cm in diameter.); chirashi-sushi is prepared by scattering on top of sushi-rice several kinds of sliced raw fish, shellfish, processed vegetables, etc.; and a bowl article are prepared by putting on top of sushi-rice filled in a bowl a cluster of salmon roe, sea egg, etc.

Recently, food-service industries prevailed and a great variety of frozen food is dealt in large quantities. As to sushi also, it became popular in that prepared sushi is wrapped and tasted by removing the wrapping, or that the prepared sushi is quickly frozen to be preserved. Frozen sushi have advantages that, foodstuff in season can be used, it is superior in a sanitary point of view, is matured in taste, therefore a high value-added article is obtained, and industrial production is possible resulting reduced cost. Therefore, it is desired that, frozen sushi can be shipped in correspondence with demand to be retailed to individual customers or supplied to restaurants, can be unfrozen just before the time the articles

are handed over to the customers or served to the customers at the restaurants, or the purchasers themselves can thaw when they want to eat them.

As in the past, frozen sushi has been unfrozen in room temperature (natural thawing), unfrozen using flowing water, steam, or heated air, unfrozen putting in hot water, or unfrozen by high-frequency electromagnetic microwaves in an electronic oven in which the sushi-rice portion and sushi-neta portion of the sushi are exposed to the microwaves without distinction. However, when the sushi comprising sushi-rice and sushi-neta is heated evenly, the sushi-rice is scarcely deteriorated in quality, but the sushi-neta is cooked if its temperature exceeds an adequate temperature and reduced in quality resulting in reduced flavor. In addition, there has been a case when temperature difference exists in the sushi in the thawing stage, it often perished the freshness of the sushi.

Several arts are known in which sushi is unfrozen in an electronic oven with its sushi-neta portion covered by material capable of preventing the penetration of electron beam or attenuating it so that the sushi-rice portion is heated to body temperature and the sushi-neta which is a piece of raw fish, shellfish, etc., is unfrozen in a cold state for preventing the reduction in flavor due to warmed sushi-neta. For example, in Japanese patent Laid-Open Publication No.5-184314 (cited reference 1) is disclosed a thawing method in which frozen sushi is contained in a container of which the whole part is formed of material capable of preventing the penetration of electron beam or attenuating it, the frozen

sushi is heated in an electronic oven so that the sushi-rice portion is heated to 10 ~ 20 °C and the sushi-neta is unfrozen by the remaining heat of the sushi-rice portion. However, with this prior art it is difficult to effect discriminated heating of the sushi-rice portion from the sushi-neta.

In Japanese patent Laid-Open Publication No. 9-149768 (cited reference 2) is disclosed a thawing method in which a frozen sushi comprising sushi-rice and sushi-neta is placed in an electronic oven in the range irradiated with the high-frequency waves radiated from the high-frequency wave generator of the oven such that, the lower face of the sushi-rice portion faces toward the high-frequency wave generator in order to allow the high-frequency waves to act on the sushi-rice portion, while covering the parts of the sushi-neta running off the edges of the sushi-rice portion with reflective plates in order to alleviate the action of the high-frequency waves on the sushi-neta. By this, it is realized that a balanced unfreezing of boiled rice and sushi-neta can be achieved with the discriminated heating of the sushi-rice portion from the sushi-neta. However, this prior art is limited to the case the sushi is laid with the sushi-neta side down, and is not applicable to bo-sushi (or bar-like sushi) and to the case the sushi-neta does not run off the edges of the sushi-rice portion, since the parts of the sushi-neta running off the edges of the sushi-rice portion must be covered with reflective plates in order to alleviate the action of high-frequency waves on the sushi-neta. In addition, as the sushi is unfrozen in the state it is upside-down, it may happen that the sushi gets out of its shape when it is turned over for serving to the

customer after unfreezing.

Further, in Japanese patent Laid-Open Publication No.9-252945(cited reference 3) is disclosed a cooking container which has concaved parts, in each of which a piece of nigiri-sushi is to be accommodated, and a flat plate-like cover laid thereon is made of material capable of shielding the microwaves of the electronic oven for allowing the sushi-neta not to be directly heated.

However, with the prior art like this, as only the cover facing the sushi-neta is made of shielding material, the microwaves intrude from the side face of the sushi-neta and part of the sushi-neta may be cooked.

In Japanese patent Laid-Open Publication No.10-56995(cited reference 4) is disclosed a thawing method of frozen sushi, in which a plurality of pieces of frozen nigiri-sushi are accommodated in concaves formed in a container, the concaves being arranged obliquely, with their sushi-neta on top, and a magnetic shielding material formed in a shape to be used as a cover is supported on the fringe of the container to close the opening of the same. When heating the sushi in the container, the upper side and flank side of sushi-neta portion is shielded by said shielding material, and the sushi-rice portion is unfrozen to be a little higher in temperature than that of the sushi-neta portion. However, the magnetic shielding part for covering the sushi-neta portion is formed by placing on the container the magnetic shielding cover having a concave a little larger than the perimeter of the fringe of the container so that the bottom of the concave is supported by the fringe

of the container, that means periphery of the container is shielded and the flank sides of each individual sushi-neta may or may not be shielded. Therefore, it is inevitable that microwaves intruding from the sushi-rice side accidentally heat the sushi-neta portion.

In all of above-mentioned housing containers of prior arts, the pieces of nigiri-sushi are received in the deep concaves formed in the container, so that it is somewhat difficult to pick up a piece of unfrozen nigiri-sushi from the container. Therefore, it is necessary to take it off from the container and spread on another plate or the like to be prepared. This is very troublesome and on the other hand may cause troubles in sanitary aspect in some cases. Further, with the prior arts shown in cited references 3 and 4, flank sides of each individual sushi-neta are not shielded and there remains a possibility that the sushi-neta portion is unfrozen by the microwaves diffracted to or reach indirectly the sushi-neta portion, resulting in damaged flavor.

There are disclosed apparatuses for unfreezing sushi apart from such containers as mentioned above. For example, in Japanese Patent No.3264244 (cited reference 5) is disclosed an apparatus in which pieces of nigiri-sushi are arranged on the apparatus comprising a plate body to be placed in an electronic oven and the sushi-rice portion can be heated to body temperature while the sushi-neta is unfrozen in cold temperature. This is not contrivance of a sushi housing container itself but contrivance of a heating apparatus and is beside the point of the present invention.

Further, in Japanese Patent No.3201933 (cited reference 6) is disclosed a wrapping structure of bo-sushi. According to the disclosure, a piece of bo-sushi with a slice of mackerel or a conger eel placed on top of the sushi-rice formed in a large rectangular shape is wrapped such that, the piece of sushi is wrapped with a first wrapping film in a state degassed and closely contacted with the film, the sushi-neta portion is covered with a sheet of aluminum foil from over the film, the sushi wrapped with the first wrapping film and covered with the sheet of aluminum foil on the portion of the sushi-neta from over the first wrapping film is wholly wrapped with a second wrapping film in a state degassed and closely contacted with the second wrapping film, and the whole is frozen. When the whole is unfrozen in an electronic oven, the sushi can be unfrozen to a state the sushi-rice portion is warm while the sushi-neta portion is cold.

However, with this prior art every piece of bo-sushi comprising sushi-rice and sushi neta portion must be wrapped with wrapping films and covered with a sheet of aluminum foil, so it is troublesome and results in high cost. Further, when serving the sushi to be tasted, the films and a sheet of aluminum foil must be removed, and the removing is very troublesome.

#### **SUMMARY OF THE INVENTION**

The present invention is made in light of the above-mentioned circumstances, and the challenge of the invention is to provide a frozen sushi housing container of simple and less cost demanding construction with which the sushi-rice portion can be unfrozen to body temperature and sushi-neta portion to a cold temperature and on the other hand the unfrozen sushi can

be served to be tasted utilizing a part of the container, a packed frozen sushi unit composed using the container, and a method of distributing frozen sushi.

To solve the problems mentioned in the forgoing, a container of the present invention is the one, for housing frozen sushi consisting of shaped sushi-rice and sushi-neta put thereon such as nigiri-sushi and bo-sushi, characterized in that the container comprises a main housing body having one or plurality of sushi housing parts protruding upward matching the shape of the sushi, the main housing body being open downward, and a bottom cover which can be engaged with the fringe face of the opening of said main housing body and is provided with one or plurality of sushi retaining parts with each of which can contact the bottom face of sushi-rice portion of the sushi housed in said sushi housing part or parts; said main housing body and bottom cover are made of material permeable to microwaves; and a microwave shielding film is formed on each of said protruding sushi housing parts at the part the sushi-neta portion is to be positioned.

A packed frozen sushi unit characterized in that nigiri-sushi or bo-sushi is housed in the frozen sushi housing container according to the present invention so that the sushi-neta portion is positioned in said sushi-neta portion positioning part, said bottom cover is fitted in to the main housing body so that each of said sushi retaining parts matches with the bottom face of sushi-rice portion of each of the sushi housed in each of said sushi housing parts and sealed, and the sushi is frozen in this sealed state, is also proposed



for allowing distribution of frozen sushi as is packed in the container.

With the invention, frozen sushi is retained in the sushi retaining part of the bottom cover and surrounded with the sushi housing part with a microwave shielding film formed thereon and protruding upward matching the shape of the sushi, so the microwaves in an electronic oven, etc. can intrude through the bottom cover and reach the sushi-rice portion to unfreeze the portion without striking sushi-neta. The sushi-neta can be unfrozen by the remaining heat of the unfrozen sushi-rice and the retention effect of the sushi retaining part and housing part. Therefore, it is possible to serve sushi in the most preferable state in which the temperature of the sushi-rice portion is at body temperature and the sushi-neta is cold without undergoing thermal denaturation. Further, as the frozen sushi is retained on the sushi retaining part of the bottom cover, when the packed frozen sushi unit is unfrozen and served up on the table, the sushi can be tasted by removing the main housing body, the bottom cover serving as a dish.

That is, sushi can be served without replacing, for the bottom cover can be used as a dish, and drying or adherence of germs accompanying the replacement can be prevented.

As the bottom cover on which the sushi-rice portion is supported is made of material permeable to microwaves, good unfreezing is possible in a short time and breeding of sundry germs can be prevented.

Further, the frozen sushi housing container according to the present invention can be produced with low cost as only

a microwave shielding film is formed on the main housing. Therefore the packed frozen sushi unit also can be offered at a low price, and on the other hand it is sanitary and convenient in handling as the sushi is housed in the container and frozen as is housed.

The same effect as the above-mentioned invention can be obtained in the case of maki-sushi by providing a container for housing frozen maki-sushi which has an ingredient in the center, the ingredient is surrounded by sushi-rice, and the outer surface of the sushi-rice is covered with a dried laver sheet, wherein the container comprises a main housing body having a sushi housing part protruding upward and opened downward matching the shape of the upper circumference of the maki-sushi and having a microwave shielding film formed thereon so that the film has a plurality of interrupted portions along the cross-sectional circumference thereof; a bottom cover having a sushi retaining part to support the maki-sushi, the bottom cover being able to be fitted in to the main housing body in the fringe part of the main housing body, the bottom cover having no microwave shielding film formed thereon; and microwaves can penetrate the bottom cover and the interrupted portions of the microwave shielding film to reach the sushi-rice portion; and also by providing a packed frozen sushi unit using the frozen maki-sushi container, wherein maki-sushi is accommodated in the sushi housing part protruding upward, then the bottom cover is fitted in to the main housing body in the fringe parts of the main housing body to retain the maki-sushi, and the maki-sushi is frozen in this state.

In this case, said maki-sushi (rolled sushi) is retained in the sushi-retaining part of the bottom cover and covered with the sushi housing part protruding upward matching the shape of the maki-sushi and having a microwave shielding film formed thereon such that the film is interrupted in a plurality of portions, so that the microwaves in an electronic oven, etc. can intrude through the bottom cover and also through the interrupted portions of the microwave shielding film and reach the sushi-rice portion surrounding the ingredients in the center to unfreeze the sushi-rice portion. The ingredients in the center can be unfrozen by the heat of the unfrozen sushi-rice and the retention effect of the sushi retaining part and housing part. Therefore, it is possible to serve sushi in the most preferable state in which the temperature of the sushi-rice portion is at body temperature and the ingredient in the center is cold. Further, as the frozen maki-sushi is retained on the sushi retaining part of the bottom cover, when the packed frozen maki-sushi unit is unfrozen and served up on the table, the maki-sushi can be tasted by removing the main housing body, the bottom cover serving as a dish. As maki-sushi is housed in the container and frozen as it is, it is sanitary and convenient in handling.

In the case of chirashi-sushi or a bowl article, a container is provided which comprises a main housing body having a sushi housing part opened downward for covering the top of the sushi-rice with topped ingredients, a microwave shielding film being formed on the surface of the sushi housing part at least in the part facing the ingredients; a bottom cover having a

sushi retaining part for supporting the ingredients topped boiled rice, the bottom cover being able to be fitted in to the main housing body in the fringe part of the main housing body having no microwave shielding film formed on the surface thereof; and microwaves can penetrate the bottom cover to reach the sushi-rice; and also a packed frozen sushi unit is provided in which the container for housing and freezing a bowl article according to the present invention is used, ingredients topped on the boiled rice such as chirashi-sushi is accommodated in the main housing body so that the topped ingredients face the portion thereof where the microwave shielding film is formed, the bottom cover is fitted in to the main housing body in the fringe parts of the main housing body to retain the sushi-rice, and the ingredients topped on boiled rice such as chirashi-sushi is frozen in this state.

By composing as mentioned above the container for housing frozen chirashi-sushi or a frozen bowl article or composing the packed frozen sushi unit, sushi-rice is retained in the retaining part of the bottom cover, and the raw fish, shellfish such as salmon roe, sea egg, etc. or processed ingredient placed on the top center part of the sushi-rice is covered with the sushi housing part with a microwave shielding film formed thereon, so the microwaves in an electronic oven, etc. do not strike the raw fish, shellfish such as salmon roe, sea egg, etc., the microwaves pass through the bottom cover and reach the sushi-rice to unfrozen the same. The raw fish, shellfish, processed ingredient in the center part can be unfrozen by the heat of the unfrozen sushi-rice and the heat-retention effect of the sushi retaining part and housing part. Therefore,

it is possible to serve sushi in the most preferable state in which the temperature of the sushi-rice portion is at body temperature and the ingredient in the center is cold. Further, as the frozen chirashi-sushi or bowl article is retained on the sushi retaining part of the bottom cover, when the packed frozen sushi unit is unfrozen and served up on the table, the chirashi-sushi or bowl article can be tasted by removing the main housing body, the bottom cover serving as a dish. As chirashi-sushi or bowl article is housed in the container and frozen as is housed, it is sanitary and convenient in handling.

By forming the wall of each of the protruding parts of the main housing body for nigiri-sushi or bo-sushi such that it broadens toward end, the removing of the main housing body is easy when unfrozen packed sushi unit is served up on the table.

Further, it is preferable that each of the sushi retaining parts to be contacted with the bottom face of the sushi-rice portion is formed concave, and the concave is shaped to match the shape of the bottom part of the sushi-rice portion.

By forming the bottom cover of the frozen sushi housing container, only the lower part of the sushi placed on the sushi retaining part sinks in the concave with large part of the sushi exposed, it is easy to pick up the unfrozen sushi. Therefore it is possible to serve the sushi to be tasted as is placed on the bottom cover.

It is preferable in the case of a container for nigiri-sushi

capable of housing a piece of nigiri-sushi in each of a plurality of sushi housing parts that the main housing body is formed in a rectangular shape in the plan view, the protruding parts are arranged in two rows parallel to the long sides of the rectangle, each sushi housing part being parallel to each other and oblique to the sides of the rectangle.

By arranging like this a plurality of pieces of nigiri-sushi, the sushi can be served up on the table in good appearance not only at home but also in a sushi bar. In addition the container itself can be formed in a small size.

By forming the container in a rectangular shape in the plan view, and by accommodating a piece or pieces of nigiri-sushi with sushi-neta of non-raw fish such as cooked conger eel, egg, cooked clam, etc. in one or plurality of protruding parts located in the corner parts of the rectangle and pieces of nigiri-sushi with sushi-neta of raw fish, shellfish in a plurality of the remaining protruding parts not located in the corner parts, an effective arrangement of sushi is achieved such that the frozen sushi with sushi-neta of raw fish are retained in the central part of the bottom cover and sushi with sushi-neta of not influenced by higher temperature are retained in the peripheral or corner parts.

Thawing speed in an electronic oven is generally faster in the peripheral part than in the central part. Therefore, by placing the sushi with raw fish sushi-neta in the central part and the sushi with sushi-neta not influenced by higher temperature in the peripheral part in the housing container, the sushi-neta such as egg, octopus, squid, etc. are unfrozen

to a somewhat higher temperature but the sushi-neta of raw fish placed in the central part are unfrozen in a cold state, thus an effective unfreezing can be achieved and the unfrozen sushi can be tasted with good flavor of the raw fish retained.

It is preferable that the container is composed such that the periphery part of the bottom cover can be fitted in to the peripheral fringe part of the main housing body and the peripheral skirt part of the bottom cover is extended downward lower than the sushi retaining part, and microwaves can intrude passing through the peripheral skirt part to the underside of the sushi retaining part.

With this construction of the container, the sushi retaining part of the bottom cover and the sushi housing part of the main housing body can be matched by fitting the peripheral part of the bottom cover in to the peripheral fringe part of the main housing body, and the attaching of the main housing body with the bottom cover is easy.

The microwave shielding film formed on the main housing body can be formed by metal evaporation.

By forming the microwave shielding film by metal evaporation, the film for shielding microwaves can be easily formed on the main housing body made of any material.

The microwave shielding may be formed on the outer or inner surface of the main housing body.

A picture image of a piece of sushi having sushi-neta put on top of the sushi-rice portion and housed in each of the

protruding part of the main housing body so that the sushi-neta faces the upper part and the sushi-rice part faces the sides of the protruding part, is formed, that is a photo of the housed sushi is attached, on each of the protruding part which houses the sushi corresponding to the picture image.

By attaching the photo of the sushi on the protruding part, consumers can recognize what kind of sushi is housed, and consumer's buying inclination can be greatly stimulated.

The periphery part of the bottom cover can be fitted in to the peripheral fringe part of the main housing body and the peripheral skirt part of the bottom cover is extended downward lower than the sushi retaining part, and microwaves can intrude passing through the peripheral skirt part to the underside of the sushi retaining part.

By forming the bottom cover to have peripheral skirt part, which forms a vacant space inside thereof, to support the main housing body, microwaves can intrude passing through the skirt part to unfreeze the sushi-rice portion effectively, and further by retaining unfrozen sushi on the retaining part of the bottom cover, sushi can be served to be tasted in good appearance.

By making the bottom cover of heat insulating material permeable to microwaves, the sushi-rice portion can be exposed to the microwaves in an electronic oven to be unfrozen, and the heat of the sushi-rice portion is difficult to escape through the bottom cover after unfreezing and the sushi-rice



portion can supply enough heat to the sushi-neta.

In the case of maki-sushi, chirashi-sushi, or a bowl article, by forming the bottom cover to have a concave as a sushi retaining part for receiving the maki-sushi, chirashi-sushi, or bowl article and determining the depth of the concave to correspond to the volume of the sushi-rice, the amount of the microwaves which strike the sushi-rice portion of the frozen maki-sushi, chirashi-sushi, or a bowl article can be increased resulting in more effective unfreezing.

A method of distributing frozen sushi such as nigiri-sushi or bo-sushi consisting of shaped sushi-rice and sushi-neta put thereon according to the present invention is characterized in that a picture image of each piece of sushi housed in each of the protruding part of the main housing body so that the sushi-neta faces the upper part and the sushi-rice part faces the sides of the protruding part, is formed on each of the protruding part corresponding with the housed piece of sushi so that the picture image can be visually recognized in the process of distribution.

As has been described in the foregoing, since a variety of sushi are packed in the container according to the present invention just after preparation or production, it is sanitary compared with when a variety of frozen sushi are replaced to be accommodated in a container, and on the other hand, as sushi-neta is frozen while it is fresh, its flavor can be retained. Further, according to the present invention, unfreezing of sushi can be done as is housed in the container

in a short time and in a good condition, so the breeding of sundry germs can be suppressed. Furthermore, the shape of the container itself and the arrangement of sushi in the container are carefully determined so that the sushi can be served up on the table as it is on the bottom cover of the container. Therefore, combined with the low cost of the container, the present invention can provide an ideal distribution method of frozen sushi.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG.1 is a perspective view of an embodiment of the bottom cover of the container for housing frozen sushi according to the present invention.

FIG.2 is a cross-sectional view of an embodiment of the bottom cover of the container for housing frozen sushi according to the present invention.

FIG.3 is a perspective view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention.

FIG.4 is a cross-sectional view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention.

FIG.5 is a cross-sectional schematic view when pieces of frozen nigiri-sushi are accommodated in an embodiment of the container according to the present invention.

FIG.6 is a perspective view of an embodiment of the bottom cover of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi.

FIG.7 is a cross-sectional view of an embodiment of the

bottom cover of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi.

FIG.8 is a perspective view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi.

FIG.9 is a cross-sectional view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi.

FIG.10 is a cross-sectional schematic view when pieces of frozen nigiri-sushi are housed in an embodiment of the container according to the present invention in the case the container is formed for housing a bo-sushi.

FIG.11 is a view illustrating an example of arrangement of pieces of nigiri-sushi accommodated in the container according to the present invention.

FIG.12 is a schematic block diagram showing the frozen sushi distribution method according to the present invention.

FIG.13 is a cross-sectional view of an embodiment of the present invention in the case of applying to kappa-maki, sarada-maki (or Californian roll), etc.

FIG.14 is a cross-sectional view of an embodiment of the present invention in the case of applying to chirashi-sushi, bowl article, etc.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

A preferred embodiment of the present invention will now be detailed with reference to the accompanying drawings. It

is intended, however, that unless particularly specified, dimensions, materials, relative positions and so forth of the constituent parts in the embodiments shall be interpreted as illustrative only not as limitative of the scope of the present invention.

FIG.1 is a perspective view of an embodiment of the bottom cover of the container for housing frozen sushi according to the present invention, FIG.2 is a cross-section taken along lines A-A' in FIG.1, FIG.3 is a perspective view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention, FIG.4 is a cross-section taken along lines B-B' in FIG.3, FIG.5 is a cross-sectional schematic view when pieces of frozen nigiri-sushi are accommodated in an embodiment of the container according to the present invention, FIG.6 is a perspective view of an embodiment of the bottom cover of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi, FIG.7 is a cross-section taken along lines C-C' in FIG.6, FIG.8 is a perspective view of an embodiment of the main housing body of the container for housing frozen sushi according to the present invention in the case the container is formed for housing a bo-sushi, FIG.9 is a cross-section taken along lines D-D' in FIG.8, FIG.10 is a cross-sectional schematic view in the case pieces of frozen nigiri-sushi are housed in an embodiment of the container according to the present invention in the case the container is formed for housing a bo-sushi, FIG.11 is a view illustrating an example of arrangement of pieces of nigiri-sushi accommodated in the container according

to the present invention, FIG.12 is a schematic block diagram showing the frozen sushi distribution method according to the present invention, and FIG.13 is a cross-sectional of an embodiment according to the present invention in the case of applying to kappa-maki, sarada-maki (or Californian roll), etc.

In the drawings, similar constituents are indicated with the same reference numeral. In FIG.1 and 2, reference numeral 1 is a bottom cover made of polystyrene foam or the like and formed in platform-like shape for nigiri-sushi, 2's are concaves formed on the upper part of the bottom cover 1 for retaining frozen nigiri-sushi, 3 is the peripheral skirt part of the bottom cover 1. In FIG.3 and 4, reference numeral 4 is the main housing body made of polypropylene and the like to be placed on and engaged with the bottom cover 1, 5's are sushi housing parts formed to protrude upward and match the shape of nigiri-sushi with their downsides open for accommodating sushi, the concaves 2's on the bottom cover 1 being provided to correspond to the sushi housing parts 5's. Reference numeral 6 is the peripheral skirt part of the main housing body 4. In FIG. 5, reference numeral 7 is the sushi-rice portion of nigiri-sushi, 8 is the sushi-neta of the same put on the sushi-rice (boiled rice with vinegar) portion, 9 shows the surface of the table in an electronic oven. In FIG.6 and 7, reference numeral 21 is a bottom cover made of polystyrene foam or the like and formed in platform-like shape for bo-sushi, 22 is a concave formed on the upper part of the bottom cover 21 for retaining bo-sushi, 23 is the peripheral skirt part of the bottom cover 21. In FIG.8 and 9, reference numeral 24

is the main housing body of made of polypropylene and the like to be placed on the bottom cover 21, 25 is a sushi housing part formed to protrude upward and match the shape of bo-sushi with its downside open for accommodating the bo-sushi, 26 is the peripheral skirt part of the main housing body 24. In FIG.10, reference numeral 27 is the sushi-rice portion of bo-sushi, 28 is the sushi-neta of the same put on the sushi-rice portion. In FIG.11, reference numeral 30 ~ 37 indicate nigiri-sushi with a variety of sushi-neta put on them; the sushi-neta of 30 is egg, that of 31 is a slice of raw tuna, 31 a boiled shrimp, 32 a slice of boiled octopus, 34 a slice of raw squid, 35 a slice of raw flatfish, 36 a slice of raw salmon, and 37 a slice of cooked conger eel. In FIG.12, reference numeral 40's show peaces of nigiri-sushi, 41 is a packed frozen sushi unit, the unit being composed of peaces of frozen nigiri-sushi received in the concaves of the bottom cover and the main housing body of the placed on the bottom cover to cover the sushi. Reference numeral 42 indicates freezing process of the unit 41, 43 indicates shipping process, 44 is a sushi bar, 45 indicates unfreezing process in the sushi bar, 46 is a store, 47 is a consumer, 48 indicates unfreezing in consumer's home. In FIG.13, reference numeral 51 is a bottom cover, 52 is the main housing body, 53's are holes provided in the main housing body 52 for allowing microwaves to pass through, 54's are microwaves, 55 is a concave formed in the bottom cover 51, 56 is a protruding housing part of the main housing body 52, 57 is the sushi-rice portion of maki-sushi (rolled sushi), 58 shows ingredients such as egg, sliced cucumber or like vegetables. In FIG.14, reference numeral 61 is a bottom cover, 62 is the main housing body, 63 is the sushi-rice portion ,

64 shows the zone of raw foodstuff, 65 is a concave formed in the bottom cover, 66 indicates the housing space of sushi.

The housing container of frozen sushi of the invention is composed such that, the main housing body 4 or 24 having a protruding housing part or parts with downside open and formed to match the shape of sushi to be housed, is placed on the bottom cover 1 or 21 as shown in Fig 1 or 2, and Fig 3 or 8, sushi being able to be accommodated in said housing part or parts. The frozen sushi in the container can be unfrozen in an electronic oven. The bottom cover 1 or 21 is formed in a platform-like shape as shown in FIG.2 or 7, is made of material which allows microwaves in the electronic oven to pass through, and is provided with a concave 22 or concaves 2 for receiving a piece or pieces of frozen sushi, the depth of the concave or concaves being such that part of the sushi-rice is received so that the upper part of the sushi is exposed for allowing holding with fingers.

Referring to FIG.2, height  $b$  of the bottom cover 1 and depth  $a$  of the concave 2 are influential to the irradiation of the sushi by microwaves. It was proved that irradiation is suitable when height  $b$  of the bottom cover 1 or 21 is 10 ~ 25 mm, preferably 20mm, and depth  $a$  of the concave 2 or 22 is 2 ~ 8 mm, preferably 5 mm. The peripheral skirt 3 or 23 of the bottom cover 1 or 21 is inclined to broaden toward the lower end thereof with a certain angle  $\theta$  to ease the fitting-in to the main housing body 4 or 24. The concaves 2 on the bottom cover 1 are formed to be arranged oblique to the sides of the bottom cover 1 shaped in rectangular so that each piece of

the sushi retained in the concave can be held by fingers and distance  $c$  between concaves is determined to be 5 mm or greater for enabling uniform irradiation by the microwaves in an electronic oven.

The main housing body 4 or 24 is made of polypropylene or the like. The main housing body is formed to have a sushi housing part 25 or parts 5, as shown in FIG.8 or 3, protruding upward with downside open to accommodate sushi. The concave 2 or 22 on the bottom cover 1 or 21 is provided to correspond to said sushi housing part 5 or 25. A film for shielding microwaves is formed by evaporating metal such as aluminum at least onto the sushi housing part 25 or parts 5 protruding upward for shielding the permeation of the microwaves of the electronic oven. The peripheral skirt part 6 or 26 of the main housing body 4 or 24 is, as shown by a cross-sectional view in FIG.4 or 9, is inclined to broaden toward the end with the same angle  $\theta$  as the inclination of the peripheral skirt part 3 or 23 of the bottom cover 1 or 21 so that the sushi housing part 25 or parts 5 of the main housing body 24 or 4 correspond positively to the concave 22 or concaves 2 on the bottom cover 21 or 1 and wrap a piece or pieces of sushi received in the concave 22 or concaves 2 of the bottom cover 21 or 1 when the main housing body 4 or 24 is placed on the bottom cover 1 or 21. Therefore, as shown by a cross-sectional view in FIG.5 or 10, when the main housing body 4 or 24 is placed on the bottom cover 1 or 21, the peripheral skirt part 6 or 26 of the main housing body fits with the upper part of the peripheral skirt part 3 or 23 of the bottom cover, the sushi housing part 25 or parts 25 coincide with the concave 22 or



2, and the piece or pieces of the sushi can be hermetically sealed in the housing space or spaces formed by the sushi housing part 25 or parts 5 and the concave 22 or concaves 2. The main housing body 4 or 24 may be made of metal not-permeable to microwaves such as aluminum, etc. apart from polypropylene and the like.

As shown in FIG.4 or FIG.9, the sushi housing parts 5 or part 25 is formed in a tapered shape, which allows removing of the main housing body 4 or 24 after unfreezing of sushi. The shielding film may be formed either on the outer surface or on the inner surface of the main housing body 4 or 24, and it may be formed either on all over the surface of the main housing body 4 or 24 or only on the surface required to be shielded such as the surface of the part corresponding to the sushi-neta portion. When the sushi arranged on the bottom cover 1 or 21 is covered by the main housing body 4 or 24, the sushi is invisible from above the main housing body, so a label such as a photograph showing the kind of sushi-neta of the housed sushi is attached on somewhere on the container so that the consumer can recognize what kind of sushi are contained in the container in order to stimulate consumer's buying inclination.

When thawing frozen sushi by using the container for housing frozen sushi according to the present invention, pieces of frozen nigiri-sushi, each piece consisting of a sushi-rice portion 7 and a sushi-neta 8 put thereon, or a piece of frozen bo-sushi consisting of a sushi-rice portion 27 and a sushi-neta 28 such as a slice or slices of mackerel and a white tangle

plate, are or is placed in the concaves 2 or concave 22 of the bottom cover 1 or 21; the main housing body 4 or 24 is fitted into the bottom cover 1 or 21 by utilizing the peripheral skirt parts 3 and 6 or 23 and 26; and the container housed the sushi is placed on the table 9 of an electronic oven. When the electronic oven is operated to heat the frozen sushi, the microwaves radiated in the electronic oven do not reach the sushi-neta 8 or 28 shielded by the microwave shielding film of evaporated metal formed on the surface of the main housing body 4 or 24, and the sushi-rice portions 7 or portion 27 is heated to be unfrozen by the microwaves passed through the peripheral skirt part of the bottom cover 1 or 21.

Heating is stopped after the sushi-rice portion 7 or 27 is unfrozen. By leaving the container as it is, the remaining heat of the sushi-rice portion 7 or 27 is transferred to the sushi-neta 8 or 28 helped by the steaming effect in the space formed by the concave 2 or 22 of the bottom cover 1 or 21 and the housing part 5 or 25 of the main housing body 4 or 24 and the sushi-neta 8 or 28 is unfrozen. By this way, the sushi-rice portion 7 or 27 is unfrozen to body temperature and sushi-neta 8 or 28 is unfrozen in a cold state, thus the sushi having the same flavor as that of the sushi prepared right in front of customers at a sushi bar can be served. With the container for housing frozen sushi of the present invention, the depth of the concave 2 or 22 is determined to receive the frozen sushi with the upper part thereof exposed by the height which allows holding the sushi with fingers, and in addition the concaves on the bottom cover 1 for nigiri-sushi are arranged oblique to the edge line of the bottom cover 1 similar as when

pieces of nigiri-sushi are served to the customer in a sushi bar, as mentioned before, so that when the frozen sushi is unfrozen as is arranged in the container the customer can pick up the sushi with finger easily. Therefore, the unfrozen sushi can be served to the customer by removing the main housing body 4 or 24 in the state the sushi is arranged on the bottom cover 1 or 21 without replacing the sushi.

As thawing speed in an electronic oven is generally faster in the peripheral part than in the central part, frozen pieces of sushi with raw fish sushi-neta such as tuna 31, shrimp 32, flatfish 35, and salmon 36 are placed in the central part and those with sushi-neta not influenced by higher temperature such as egg 30, boiled octopus 33, cuttlefish 34, and conger eel 37 are placed in the peripheral or corner part in the container. With the arrangement like this, although such sushi-neta as egg 30, boiled octopus 33, and cuttlefish 34, etc. are unfrozen to a somewhat higher temperature, the sushi-neta of raw fish in the central part are unfrozen in a cold state, thus an effective unfreezing can be realized.

In the forgoing, the frozen sushi housing container is explained in the case of housing pieces of nigiri-sushi and a piece of bo-sushi, the container for housing frozen sushi of the invention can be applied to rolled sushi such as kappa-maki(rolled sushi with a piece or pieces of sliced cucumber in the center) and sarada-maki(or Californian roll) of which the ingredients in the center is foodstuff less influenced by heating such as fish sausage with crab flavor, fresh vegetables of the kind less influenced by heating, cooked

vegetables, etc. FIG.13 shows an example of such a case, in which a bottom cover 51 is formed in a platform-like shape and has a concave 55 similar as in the case of nigiri-sushi and bo-sushi shown in FIG.1 and FIG.6. A main housing body 52 has a sushi housing part 56, which is a convex to correspond to the concave 55 of the bottom cover 52 for covering the exposed part of the sushi received in the concave 55. A microwave shielding film is formed on the surface of the housing part 56 such that the film has a plurality of interrupted portions or holes 53 for allowing microwaves 54 to pass through. Therefore, in the case of the example of FIG.13, the sushi-rice portion 57 is unfrozen by the microwaves 54 passing through the bottom cover 51 side and also the microwaves 54 passing through said interrupted portions or holes in the film reach the sushi-rice portion 57 and the thawing of the sushi-rice portion 57 from the upper thereof is effected although weakly. Accordingly, the whole sushi-rice portion 57 is unfrozen by synergistic effect of the heat of the unfrozen portion of the sushi-rice in the bottom cover 51 side and the weak microwave received from upside, and the ingredient 58 in the center part is also unfrozen accompanying the thawing of the sushi-rice portion 57. Therefore, by this way suitable thawing can be achieved also in the case of rolled sushi. The unfrozen rolled sushi can be served by removing the main housing body 52 similar as in the case of nigiri-sushi and bo-sushi mentioned before. In the drawing, though the interrupted portions or holes are depicted as if they penetrate the wall of the sushi housing part 56, it is enough to provide the interrupted portion or holes only in the microwave shielding film.

Further, the frozen sushi housing container of the invention is applicable to chirashi-sushi which is prepared by scattering on top of sushi-rice several kinds of sliced raw fish, shellfish, processed vegetables, etc. and a bowl article which are prepared by putting on top of sushi-rice filled in a bowl raw fish and shellfish such as a cluster of salmon roe, sea egg, etc. FIG.14 shows an example of such cases, in which a bottom cover 61 is formed in a platform-like shape and has a concave 65 similar as in the case of nigiri-sushi, bo-sushi, and rolled sushi shown in FIG.1, FIG.6, and FIG.13. A main housing body 62 has a sushi housing part 66 which corresponds to the concave 65 of the bottom cover 62 for covering the upper part of the sushi received in the concave 65. A microwave shielding film is formed on the surface of the housing part 66. Sushi-rice 63 is charged in the concave 65 of the bottom cover 61. At the top center part of the sushi-rice 63 is formed a raw foodstuff zone 64 on which raw fish and shellfish such as a cluster of salmon roe, sea egg, etc. to prepare a bowl article or cooked ingredients are scattered on the periphery part of the zone 64 to prepare chirashi-sushi. Therefore, in the case of the example shown in FIG.14, sushi-rice 63 is unfrozen from the bottom cover 61 side and the raw fish and shellfish such as a cluster of salmon roe, sea egg, etc. placed on the raw foodstuff zone 64 are unfrozen by the heat of the unfrozen sushi-rice 63. Therefore, by this way, chirashi-sushi with several kinds of raw fish, shellfish, and processed ingredients scattered on sushi-rice, and a bowl article topped with raw fish and shellfish such as a cluster of salmon roe, sea egg, etc., can be unfrozen maintaining good flavor. And the sushi can be served by removing the main housing body 62 is the same as

in the case of nigiri-sushi, bo-sushi, and rolled sushi mentioned in the forgoing.

The container for housing frozen sushi of the invention can not only is used as a dish when the sushi is unfrozen and served up on the table. The packed frozen sushi unit produced by housing sushi in the container of the invention and freezing can be distributed as it is, for the container is made of cheap material such as styrene foam, propylene, etc. and can protect the frozen sushi housed therein in a hermetically sealed state.

FIG.12 is a schematic block diagram showing the distribution method of said packed frozen sushi unit. Referring to the drawing, peaces of nigiri-sushi 40 consisting of sushi-rice and sushi-neta are received in the concaves 2 of the bottom cover 1 and the main housing body 4 is placed to cover them, then frozen in a freezing process 42 to obtain a packed frozen sushi 41. This packed frozen sushi 41 is shipped(43) to a restaurant or sushi bar 44, general store 46, etc. equipped with refrigerating facilities. In the restaurant or sushi bar 44, the packed frozen sushi is unfrozen(45) meeting customer's order. In the general store 46, the packed frozen sushi is sold to a consumer 47 who will unfrozen(48) it using his or her electronic oven. In FIG.12 is shown the case of nigiri-sushi 40 as an example, it is similar as this in the case of bo-sushi and rolled sushi.

By the distribution method as this, pieces of sushi 40, each consisting of sushi-rice and sushi neta, are frozen in the state they are housed in the container of the present

invention and they are distributed as a packed frozen sushi unit, so that it is more sanitary than when the pieces of frozen sushi are replaced to another container in the process of distribution, unfreezing, and servicing to customers, and in addition, as the sushi-neta is frozen while it is fresh, its flavor can be retained. Further, according to the present invention, unfreezing of sushi can be done as is housed in the container in a short time and in a good condition, so the breeding of sundry germs can be suppressed. Furthermore, the shape of the container itself and the arrangement of sushi in the container are carefully determined so that the sushi can be served as it on the bottom cover of the container. Therefore, combined with the low cost of the container, the present invention can provide an ideal distribution method of frozen sushi.

In the invention described in the foregoing, it is preferable to perform a little insufficient unfreezing for evading hazard due to proliferation of harmful microbes. The deterioration in eating quality due to insufficient unfreezing can be dealt with, for example, by blending low- amylase rice. The eating quality becomes suitable in the time lapse until eating time. This measure has the advantage that it is possible to deal with temperature variations during distribution and storage, and if by chance the temperature of unfrozen sushi is low there occurs no problem in its quality.